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(54) **GATEWAY FOR CONVERTING SYNCHRONOUS CLIENT/SERVER PROTOCOLS INTO ASYNCHRONOUS MESSAGING PROTOCOLS AND STORING SESSION STATE INFORMATION AT THE CLIENT**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

5,329,619 A * 7/1994 Page et al. 709/203
5,465,328 A * 11/1995 Dievendoff et al. 714/15

5,687,373 A * 11/1997 Holmes et al. 709/238
5,754,772 A * 5/1998 Leaf 709/203
5,835,724 A * 11/1998 Smith 709/227

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

WO 9527357 10/1995
WO 9745798 12/1995

OTHER PUBLICATIONS

Perrochon, L., et al., "IDLE: Unified W3-access to Interactive Information Servers," Comp. Networks & ISDN Systems, vol. 27, No. 6, pp. 927-938, Apr. 1995.*

Perrochon, L., "Translation Servers: Gateways Between Stateless and Stateful Information Systems," ftp://ftp.inf.ethz.ch/doc/papers/is/ea/nsc94.ps, pp. 1-8, 1994.*

Perrochon, L., "Multiple Service Integration Confronted with Legacy Systems," ftp://ftp.inf.ethz.ch/doc/papers/is/ea/www94.ps, pp. 1-6, 1994.*

(List continued on next page.)

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(57) **ABSTRACT**

Provided is a gateway for linking between different communication models. The gateway, which may be implemented in a computer program installable on a server system, facilitates interoperation between computer programs which require synchronous communications sessions and computer programs based on an asynchronous model of communication. The invention enables a synchronously-connected client to revisit interactions with a server and asynchronously communicating programs, to interleave interactions with more than one application, and to associate together request-response pairs of a long running application. In particular, the invention provides apparatus and methods enabling linking between the Internet WWW service and a general purpose messaging system.

18 Claims, 3 Drawing Sheets

